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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,293	12/22/2005	Peter W. Green	GB02 0136 US	3260
24738	7590	07/10/2007		
PHILIPS ELECTRONICS NORTH AMERICA CORPORATION INTELLECTUAL PROPERTY & STANDARDS 1109 MCKAY DRIVE, M/S-41SJ SAN JOSE, CA 95131			EXAMINER TOBERGTE, NICHOLAS J	
			ART UNIT	PAPER NUMBER
			2823	
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			07/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/562,293

Applicant(s)

GREEN, PETER W.

Examiner

Nicholas J. Tobergte

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 4/20/2007 have been fully considered but they are not persuasive. The Applicants contend that Yamazaki fails to show an etching process for forming a gate that involves formation of a tip in an apex region. This is not true. Yamazaki clearly shows a gate formation process that includes a tip in an apex region in Figures 1A – 1D. For clarity, the Examiner would like to point out that “tip” does not mean an exact point (as in a pyramidal shape) and indeed the tip can be flat or rounded (i.e. “the tips of your fingers”). In regards to the term “apex”, in the broadest sense apex refers to the highest point (or top) of a surface in a geometrical sense, and does not necessarily define the shape of that area.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16-19, 21, 24, 25, 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al (US 6,501,094).

Pertaining to claim 16, Yamazaki teaches a TFT comprising a substrate a gate overlying the substrate **101** and having side edges inclined towards one another, a channel

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region overlying the gate and source and drain regions **113 and 114** overlying said side edges respectively, wherein the gate has been formed on the substrate by an etching process that involved formation of a tip in an apex region between the side edges or a radius of a few nanometers.

Pertaining to claim 17, Yamazaki teaches a TFT according to claim 16, wherein the tip was removed before the channel region was applied. Method limitations are not patentable when the invention is drawn to a device. Since Yamazaki teaches the end structure, then it meets the claims. How the structure was formed is irrelevant.

Pertaining to claim 18, Yamazaki teaches a TFT according to claim 16, wherein the gate **100** is overlaid by a layer of insulating material **105**, the channel region overlies the insulating material **105**, a layer of doped semiconductor material **133 and 114** overlies the channel region, and a layer of conductive material **116 and 117** from which said source and drain regions have been formed, overlies the doped semiconductor material.

Pertaining to claim 19, Yamazaki teaches a TFT according to claim 16 wherein the channel region comprises intrinsic amorphous silicon **107**.

Pertaining to claim 21, Yamazaki teaches a TFT according to claim 18, wherein the doped semiconductor material **113 and 114** comprises n doped silicon.

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Pertaining to claim 24, Yamazaki teaches a TFT comprising:

- a gate **100** disposed on a substrate, the gate having side edges including towards one another to reach a tip having a radius of a few nanometers,
- a gate insulating layer **105** disposed on the gate;
- a channel region disposed on the gate insulating layer;
- a source electrode **116** overlying a first side edge of the gate, and
- a drain electrode **117** overlying a second side edge of the gate.

Pertaining to claim 25, Yamazaki teaches the TFT of claim 24, further comprising a layer of doped semiconductor material **133 and 114** overlying the channel region.

Pertaining to claim 27, Yamazaki teaches the TFT of claim 24, further comprising an insulating material **407** disposed between the gate and the substrate. **See Figure 4C**

Pertaining to claim 28, Yamazaki teaches a TFT according to claim 24 wherein the channel region comprises intrinsic amorphous silicon **107**.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20, 22, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claims 16-19 and 24 above.

Pertaining to claim 20, Yamazaki teaches a TFT according to claim 18, but fails to teach wherein the insulating layer is silicon nitride. Yamazaki teaches an insulating layer of silicon oxide. However it would have been obvious to one of ordinary skill in the art to substitute a known insulative material such as silicon nitride, with that of silicon oxide. Silicon nitride is a notoriously well-known insulator in the art for which it pertains. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious)

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Pertaining to claims 22 and 26, Yamazaki teaches the TFT of claims 16 and 24, but fails to specifically detail the length of the channel region, specifically the length being 20-40 nanometers. However, given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller*, Lacey and Hall (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation."

Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In *re Woodruff*, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. In *re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. In *re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

Pertaining to claim 23, Yamazaki teaches the TFT of claim 22, further comprising an insulating material **407** disposed between the gate and the substrate. **See Figure 4C**

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas J. Tobergte whose telephone number is 571-272-6006. The examiner can normally be reached on Mon - Thur 7am - 5:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NJT

  
MICHELLE ESTRADA  
PRIMARY EXAMINER